

Handheld Inertial Pedestrian Navigation System

Jakka Vishnu¹, Konduru Shanthi²
Assistant Professor^{1,2}

Department of Electronics and Communication Engineering
Malla Reddy Engineering College

Abstract: This paper outlines Handheld Inertial Pedestrian Navigation System with Accurate Step Modes and Devices Poses Recognition using a microcontroller which is used to develop a navigation system which helps the pedestrian to locate his current position, when the well known technology like GPS used in navigational systems fail.

Index Terms: Inertial, GPS, Pedestrian, Recognition and Navigation.

I Introduction:

GPS (Global Positioning System) is a navigation system that provides instantaneous sub-meters accuracy position information for users worldwide. It is based on the multilateration principle where the user on the surface of the earth determines position using range information from multiple satellites. Because of its superior performance and capabilities, GPS is slated to be the primary means of navigation for all sectors. However, GPS is susceptible to electronic interference and jamming. A deliberate or unintentional low-power radio transmission in certain frequency bands can render GPS unusable in a large geographical area.

II Existing Work or Literature Survey:

The existing method uses Dead reckoning which is a form of navigation whereby the current position of pedestrian is deduced by knowing speed and direction of travel since the last known position. The primary advantage of dead reckoning is that it relies on sensors contained within and, provides a navigation system that requires no interaction with the world outside. A self contained navigator is desirable especially as a backup navigation system.

III Proposed Work:

The proposed work involves Implementation of Handheld Inertial Pedestrian Navigation System which involves the controlling device of the whole system as a Microcontroller. The microcontroller continuously reads data from GPS (Global Positioning System) receiver and

displays this information on LCD display unit. When the system is not able to read the data from GPS receiver, it automatically switches to the backup navigational system from the last stored GPS location. This back up navigational system has a Digital compass and Pedometer button which helps in locating the movement direction. Also the heading direction is shown through a LCD display. The pedestrian location can be received by simply sending an SMS to the system.

IV Results:

The proposed system “Handheld Inertial Pedestrian Navigation System with Accurate Step Modes and Devices Poses Recognition” using PIC16F877A microcontroller is an exclusive project which is used to develop a navigation system which helps the pedestrian to locate his current position, when the well known technology like GPS used in navigational systems fail.

References

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